

SERVICE MANUAL

STEREO TURNTABLE

**SANYO****PLUS Q40**

(EUROPE)



SPECIFICATIONS

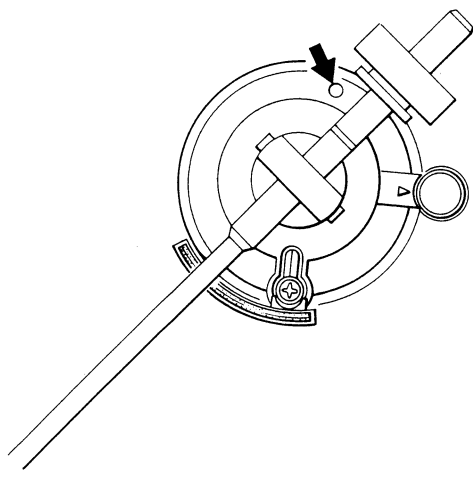
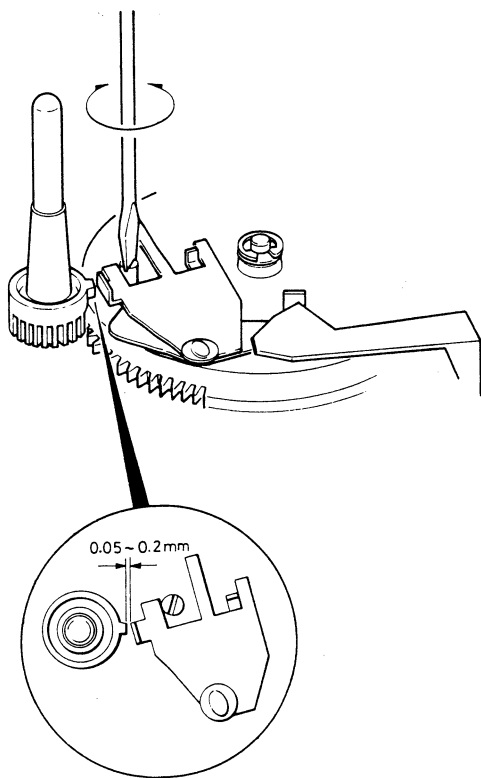
Motor	Quartz PLL brushless servo motor	Tracking error	$\pm 1.5^\circ$
Drive system	Direct drive/Full auto	Stylus pressure force range	0–3 gr.
Speeds	33-1/3 and 45 rpm	Overhang	15 mm
Wow & flutter	0.03% WRMS	Power source	AC: 115/220V, 50Hz
Rumble	–70dB DIN B spec.	Power consumption	6 watts
Turntable platter	Aluminum die casting 12-1/16" (306 mm) dia. 2 lbs. 3 ozs. (1 kg)	Dimensions (Approx.)	17-3/8" W x 14-13/16" D x 6-1/8" H (440 x 372 x 156 mm)
Tone arm	Static-balance straight type	Weight (Approx.)	14 lbs. 2 ozs. (6.4 kg)

*Specifications and design are subject to change without notice.

ADJUSTMENT

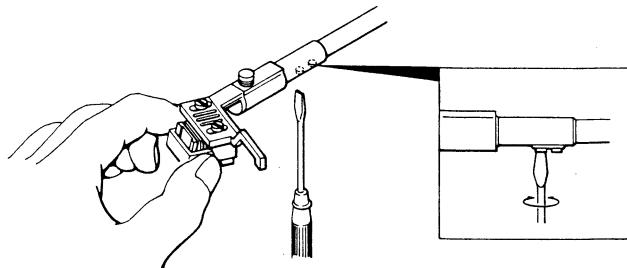
ADJUSTMENT OF AUTO-RETURN

1. Turn the shaft C to adjust (visually) so that the most approach value of the protrusion A of a lever caulked to a gear (M34) and the protrusion B of a pinion of the motor shaft comes within the range of 0.05 ~ 0.2mm.
2. There is a shaft which is accessible with an ordinary screwdriver through the hole below the tonearm. (See illustration at right.) When the stylus has reached a point approximately 55mm from the turntable center, turn the shaft clockwise or counterclockwise and select a position where it actuates the auto-return.



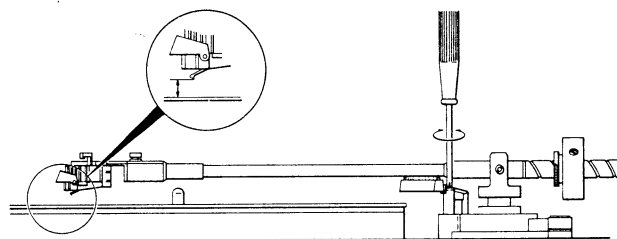
ADJUSTMENT OF HEADSHELL

The headshell attached to the tonearm should not be inclined either to the right or to the left. If necessary, loosen the two screws on the bottom of the tubular arm and adjust the headshell. Be sure that the stylus is normal to the record surface.



ADJUSTMENT OF TONEARM LIFTER

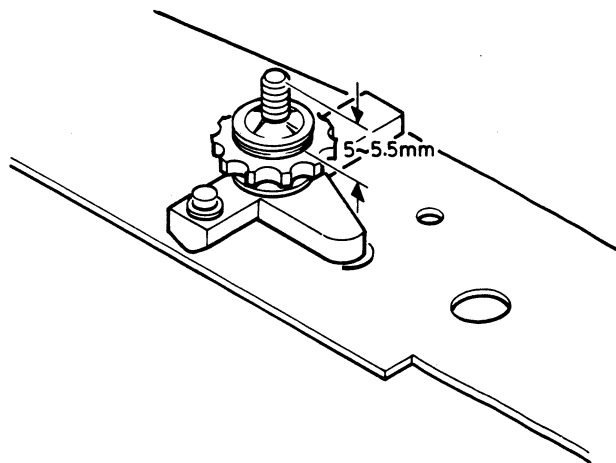
Depress the cueing button, and turn the screw (46) of the arm lifter (4) to adjust so that the distance between the stylus and the record surface becomes 10mm when the stylus of the arm moves up near the outer circumference of the record.



ADJUSTMENT OF LIFT-UP LEVER SPRING

Depress the "STOP/START" button, turn the turntable by hand, and turn the plate nut (M14) of the seesaw lever (M16) to adjust so that the distance between the stylus and the record surface becomes 10mm in lean-in of the stylus near the outer circumference of the record. However, the distance from the shaft head to the plate nut top should be within the range of 5 ~ 5.5mm.

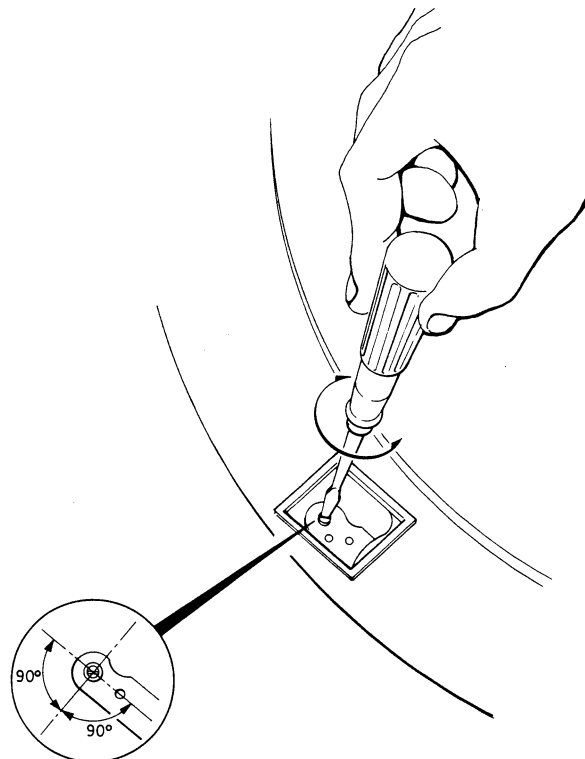
As the plate nut is turned clockwise, the tonearm will move up; counterclockwise, move down.



ADJUSTMENT

ADJUSTMENT OF SET DOWN POINT

It is used to adjust the set-down point in the case where the stylus does not come down to the start position of the record even if the speed selector is changed over to the designated speed setting corresponding to the size of the pertinent record. As it is turned clockwise, the stylus comes down towards the outer side; counter-clockwise, towards the inner side of the existing set-down point.



ADJUSTMENT OF DD MOTOR

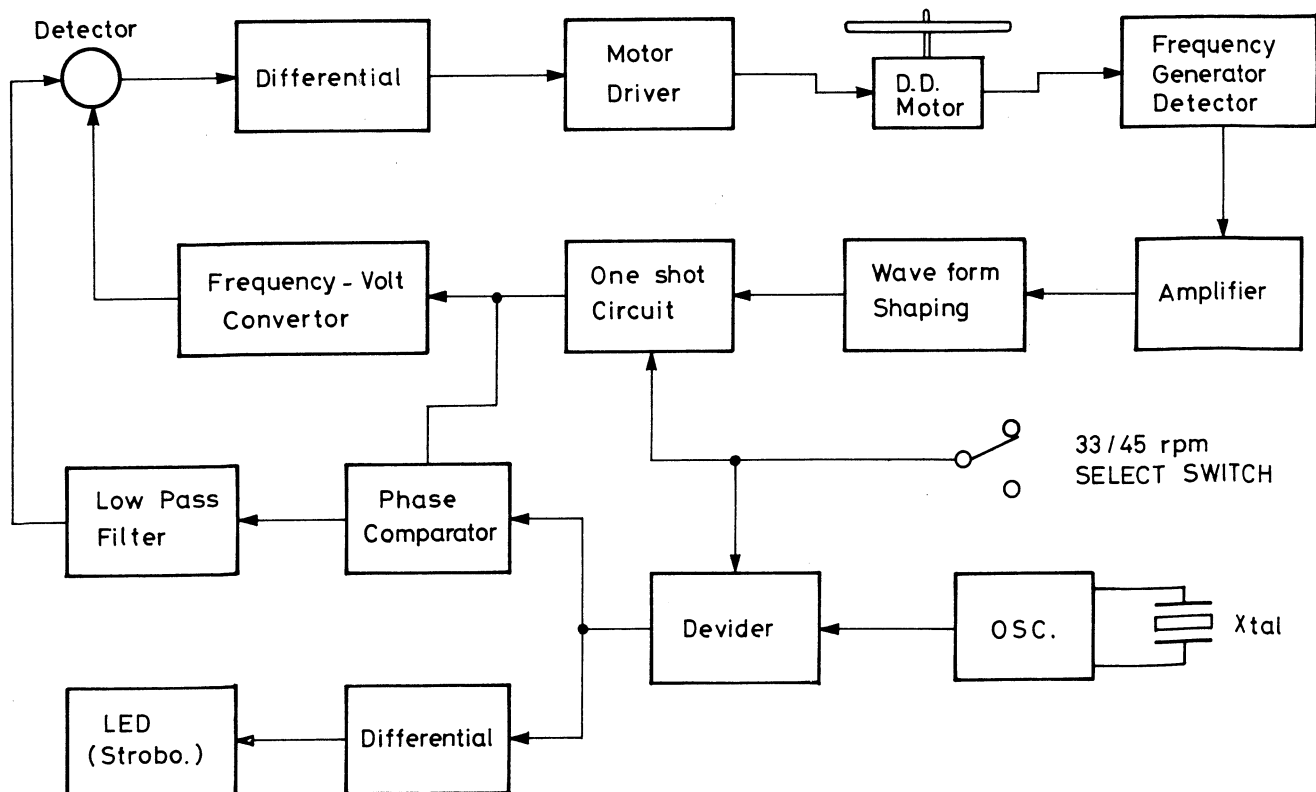
Adjust the speed of the direct drive motor by means of VR33 (100 k Ω) VR45 (220 k Ω) for 33-1/3 rpm and 45 rpm, respectively. When the desired adjustment can not be achieved with them under the semi-fixed condition, change the resistance value of R331 or R451 to half ~ twice the existing value to accomplish the adjustment. Check whether the adjustment is good or bad by means of the strobo.

QUARTZ PLL CIRCUIT (DESCRIPTION)

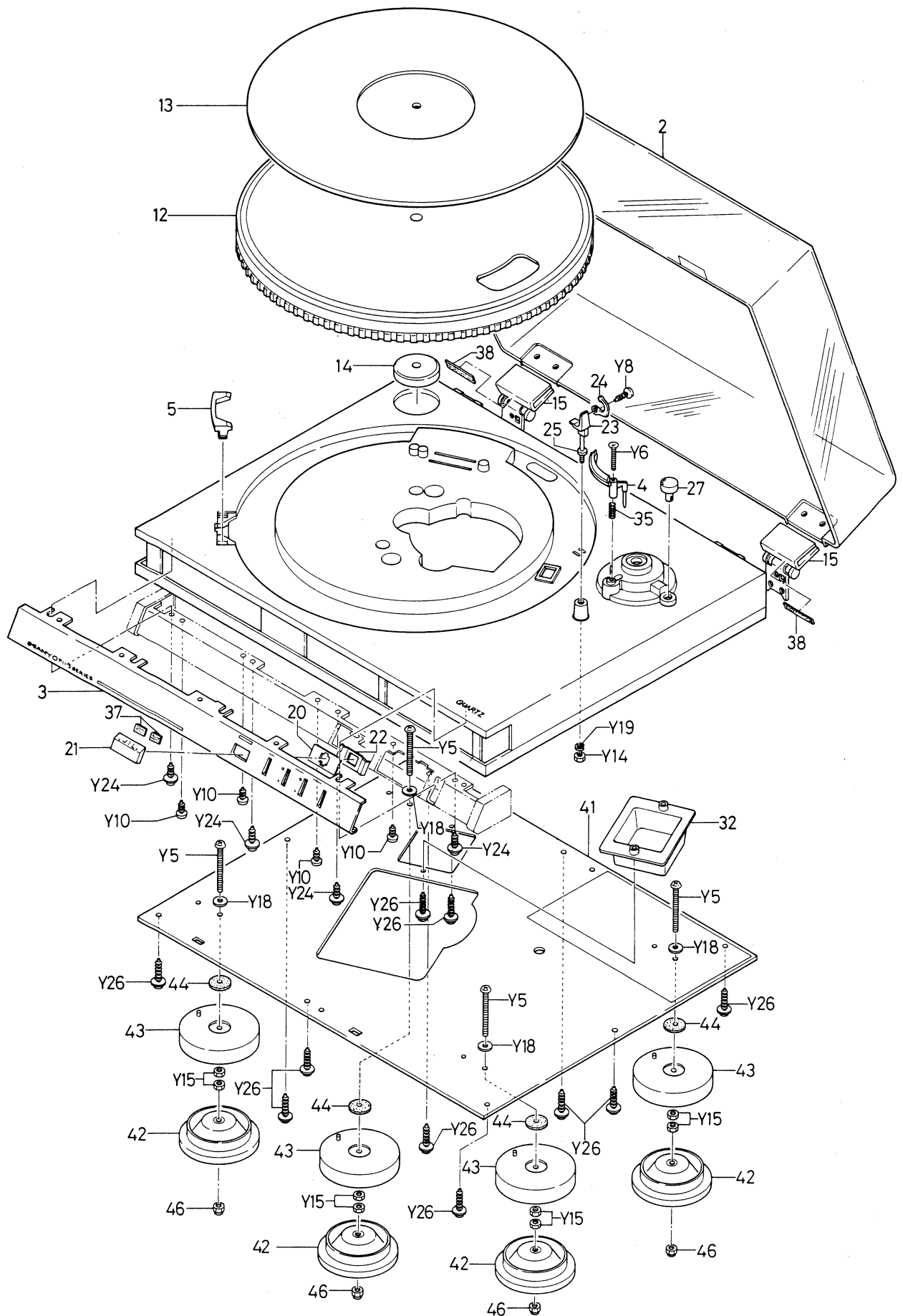
The quartz PLL circuit serves to control the motor driver by phase comparison of FG (frequency generator) frequency of the motor (frequency generated by the motor with reference frequency based on the crystal oscillator and by conversion of fluctuation in FG frequency).

Note: Wiring diagram of a part at the lower right of the motor wiring diagram is a circuit diagram possible of joint use with the upper left part.

BLOCK DIAGRAM OF D.D. MOTOR CIRCUIT



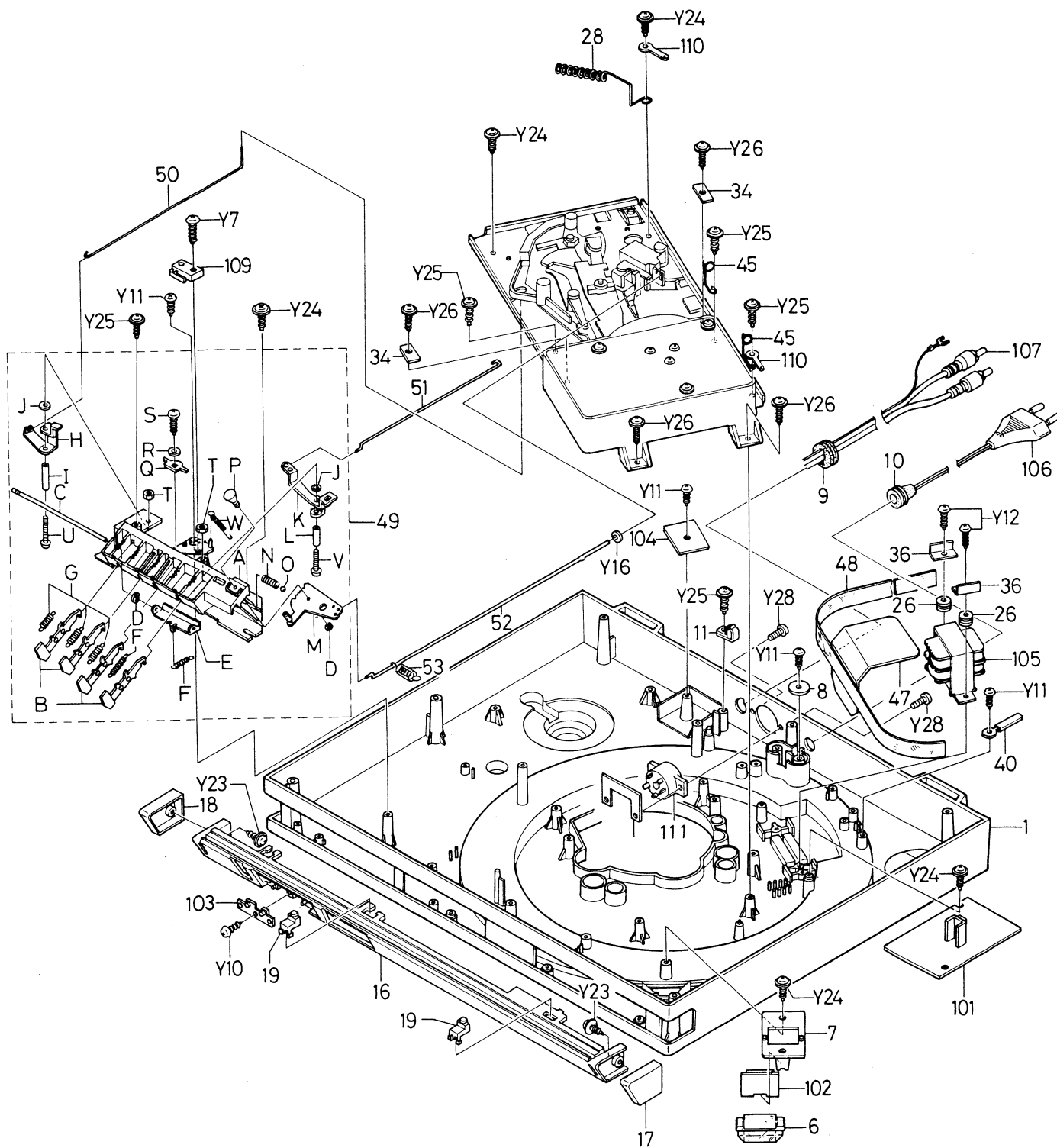
CARINET EXPLODED VIEW



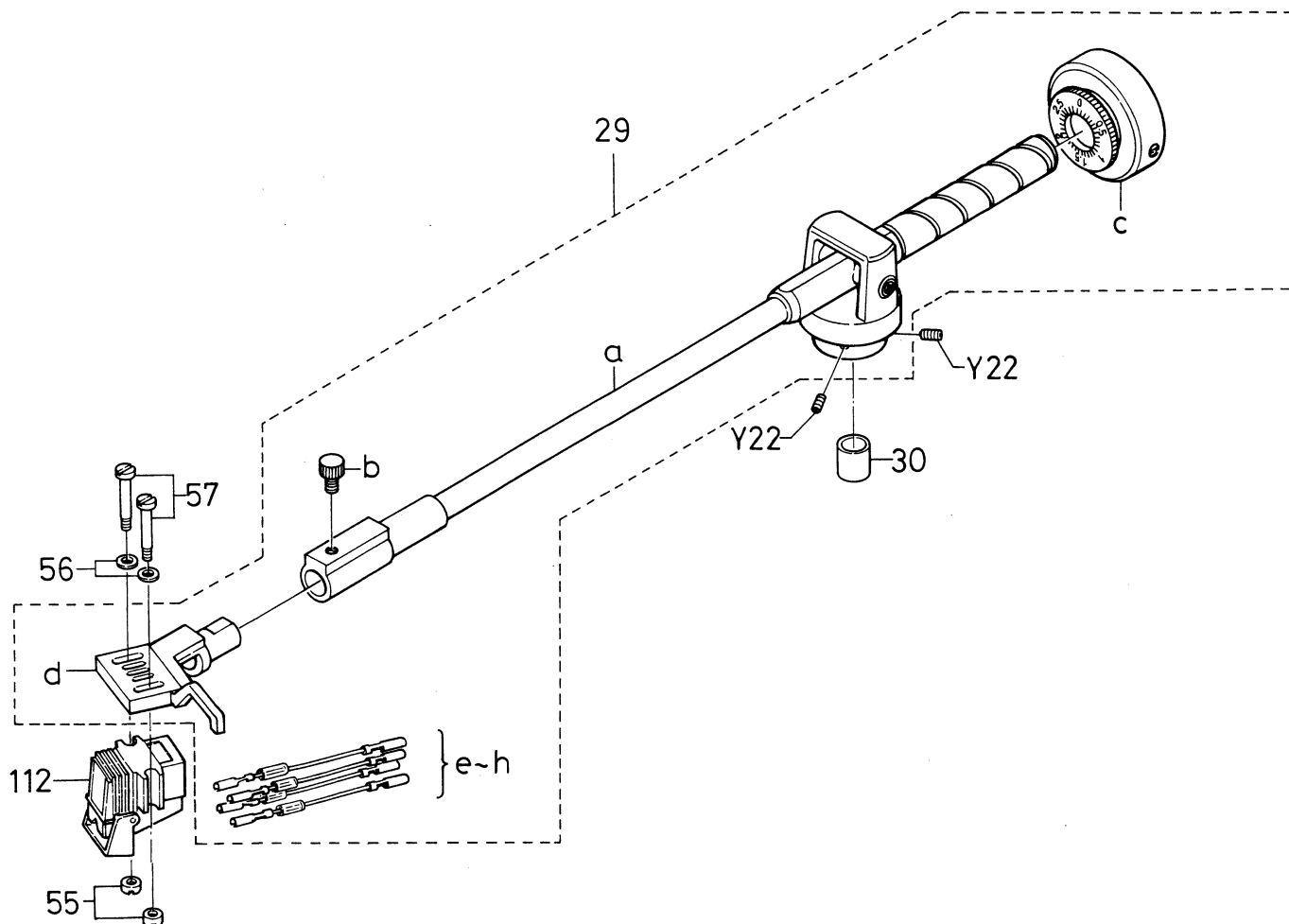
PARTS LIST

Key No.	Part No.	Description	Q'ty
PACKING			
	141-6-133T-05601	Individual Carton	1
	141-6-410T-35101	Instruction Manual	1
	141-6-415T-26600	Instruction Manual, Dutch & Swedish	1
	141-6-144T-59100	Foam Plastic Case	2
	141-6-316T-79800	Pad, Set Top	1
	141-6-317T-19600	Pad, Dust Cover	1
	141-6-317T-06700	Pad, 300 x 300mm	1
	141-2-337T-10400	Ribbon, Arm	1
	141-6-479T-42000	Label, Mechanism	1
	141-6-231T-60700	Inner Poly Cover, Set	1
	141-6-231T-35400	Inner Poly Cover, Turntable	1
	141-6-231T-25350	Inner Poly Cover, Inst. Manual	1
	141-6-231T-10200	Inner Poly Cover, Cord	2
	141-6-231T-10100	Inner Poly Cover, Accessory	3
CABINET & CHASSIS			
1	141-0-121T-15501	Deck Panel Ass'y	1
2	141-0-194T-01401	Dust Cover Ass'y	1
3	141-0-122T-30500	Front Panel Ass'y	1
4	141-0-872T-00400	Lifter Ass'y	1
5	141-2-151T-16800	Decorative Panel, Strobo	1
6	141-2-131T-22700	Clear Window, Strobo	1
7	141-2-210T-13300	Bracket, Strobo	1
8	123-2-453R-10500	Plastic Washer, AC Cord Fix	1
9	141-2-445T-16000	Rubber Cushion, Output Cord	1
10	141-2-445T-16200	Rubber Cushion, AC Cord	1
11	141-2-464T-30000	Fixer, Output Cord	1
12	141-2-118T-00700	Turn Table	1
13	141-2-246T-41801	Sheet	1
14	141-2-352T-19900	Spacer, 45 rpm Adoptor	1
15	141-2-251T-07000	Hinge	2
16	141-2-210T-13200	Bracket	1
17	141-2-153T-52300	Escutcheon, Right Side	1
18	141-2-153T-52400	Escutcheon, Left Side	1
19	141-2-464T-33200	Fixer	2
20	141-2-246T-49300	Sheet, Lever Knob	1
21	141-2-162T-17000	Lever Knob, Record Size	1
22	141-2-853T-65600	Spring Plate, Lever Knob	1
23	141-2-873T-00800	Rest	1
24	141-2-873T-00500	Rest	1
25	141-2-683T-32401	Ring	1
26	141-2-445T-05000	Rubber Cushion, Power Trans	2
27	141-2-163T-63700	Rotary Knob, IFC	1
28	141-2-852T-60600	Spring Wire, Arm Cord	1
29	141-7-743T-06820	Arm Ass'y	1
a	141-2-743T-06800	Arm	1
b	141-2-155T-05900	Ring Knob	1
c	141-0-687T-02200	Weight Ass'y	1
d	141-2-286T-01200	Head Shell	1
e	4-243T-18200	Lead Cord	1
f	4-243T-18271	Lead Cord	1
g	4-243T-18272	Lead Cord	1
h	4-243T-18273	Lead Cord	1
30	141-2-461T-36200	Pipe, Arm	1
31	123-2-472R-00401	Lug, Reject Wire	1
32	141-2-135T-48500	Cover	1
33	141-2-352T-24800	Spacer, Switch	1
34	141-2-411T-03901	Plate Nut	2
35	141-2-855T-52400	Spring Coil, Lifter	1
36	141-2-411T-12100	Plate Nut, Power Trans	2
37	141-2-447T-09500	Cushion, Lever Knob	2
38	141-2-447T-09600	Cushion, Hinge	2
39	141-2-472T-06800	Lug	1
40	141-2-472T-01201	Lug	1
41	141-2-126T-30301	Back Lid	1
42	141-0-174T-09001	Stand Ass'y	4

Key No.	Part No.	Description	Q'ty
CABINET & CHASSIS			
43	141-2-174T-08900	Stand	4
44	141-2-246T-60400	Sheet	4
45	141-2-852T-60400	Spring Wire, Switch Cord	2
46	141-2-417T-19400	Stud Nut	4
47	141-2-322T-58100	Shield Plate, Power Trans	1
48	141-2-184T-02500	Tape, Power Trans	1
49	141-0-351T-49800	Bracket M.T.G Ass'y	1
A	141-2-351T-49800	Bracket M.T.G	1
B	141-0-161T-66100	Push Button Ass'y	4
C	141-2-753T-74400	Shaft	1
D	141-2-457T-23000	Special Washer	2
E	141-2-743T-06700	Arm	1
F	141-2-855T-24900	Spring Coil	2
G	141-2-855T-51300	Spring Coil	3
H	141-2-743T-06500	Arm	1
I	141-2-461T-36500	Pipe	1
J		Washer, 3x6x0.5mm	2
K	141-2-743T-06600	Arm	1
L	141-2-461T-34301	Pipe	1
M	141-0-743T-06400	Arm Ass'y	1
N	141-2-855T-44100	Spring Coil	1
O	141-2-345T-00700	Steel Ball	1
P	141-2-753T-74200	Shaft	1
Q	141-2-742T-46000	Lever	1
R		Washer 2.6x7.5x0.5	1
S		Pan Head Tapping Screw 2.3x6mm	1
T		Hexagon Nut 3mm	2
U		Pan Head Screw 3x30mm	1
V		Pan Head Screw 3x20mm	1
W	141-2-855T-51200	Spring Coil	1
50	141-2-735T-11100	Rod, Start Cut	1
51	141-2-735T-11200	Rod	1
52	141-2-735T-11300	Rod, Record Size	1
53	141-2-855T-51000	Spring Coil, Record Size	1
54	141-2-411T-08100	Plate Nut	1
55	141-2-417T-18100	Stud Nut, Cartridge	2
56	141-2-453T-32200	Washer, Cartridge	2
57	141-2-421T-23702	Special Screw, Cartridge	2
HARDWARE			
Y4		Pan Head Screw 3x14	1
Y5		Pan Head Screw 3x30	4
Y6		Flat Head Screw 3x20	1
Y7		Tapping Screw 2.3x12	1
Y8		Tapping Screw 2.6x8	1
Y10		Tapping Screw 3x6	6
Y11		Tapping Screw 3x8	6
Y12		Tapping Screw 3x12	3
Y14		Regular Hexagon Nut 2.6	1
Y15		Regular Hexagon Nut 3	8
Y16		Washer 2x6x0.4	1
Y18		Washer 3x10x1	4
Y19		Spring Washer 2.6	1
Y22		Headless Screw 4x6	2
Y24		Tapping Screw with Washer 3x8	8
Y25		Tapping Screw with Washer 3x10	8

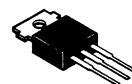
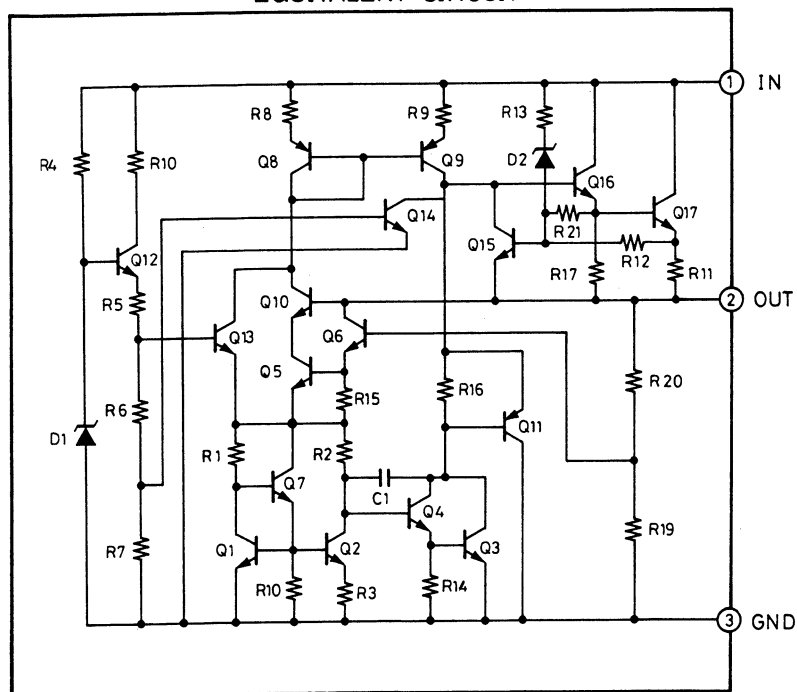


ARM EXPLODED VIEW

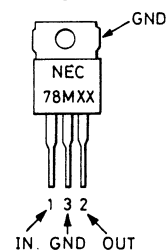


μPC78M(BIPOLAR ANALOG INTEGRATED CIRCUIT)

EQUIVALENT CIRCUIT



CONNECTION DIAGRAM

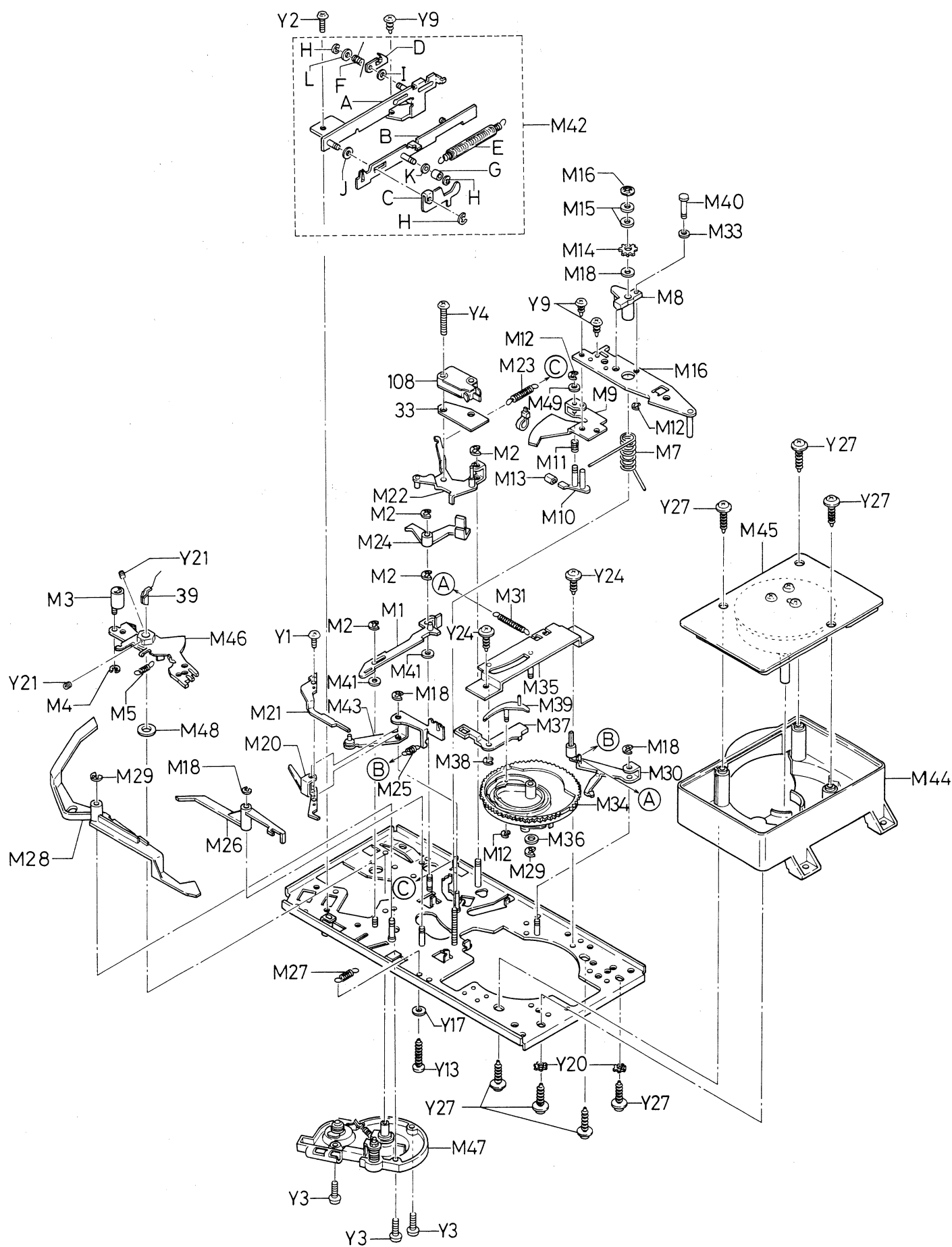


PARTS LIST

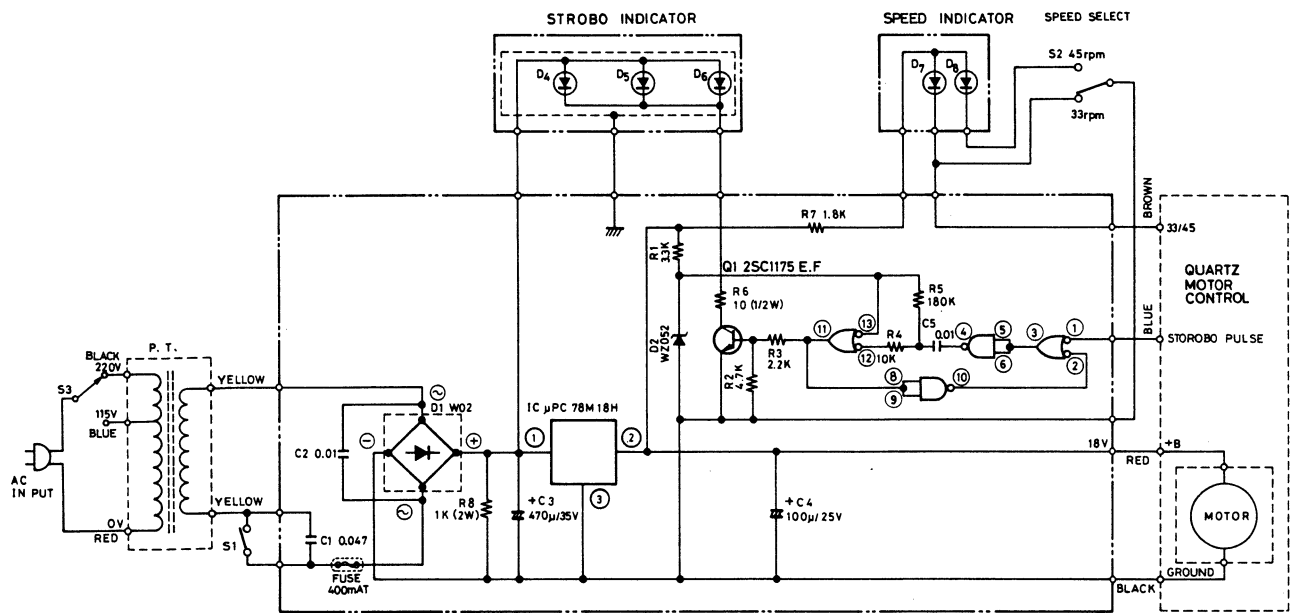
Key No.	Part No.	Description	Q'ty
HARDWARE			
Y26		Tapping Screw with Washer 3x12	12
Y28		Pan Head Screw 3x10	2
ELECTRICAL PARTS			
104	4-230T-82100	P.C. Board, Output Power	1
105	4-300T-05600	Power Trans	1
106	4-243T-77172 4-243T-82672	or Power Cord	1
107	4-243T-15171	Output Cord	1
108	4-231T-61900	Switch, Power	1
109	4-231T-11902	Switch, Speed Select	1
110	123-2-472R-00600	Lug	2
111	4-231T-53677	Socket, Voltage Select	1
112	4-157T-01201 4-156T-00800	Cartridge Ass'y Stylus	1
POWER SUPPLY PCB ASS'Y			
101	141-4-233T-23101 141-2-368T-18700 141-2-464T-08700 4-234T-01771 141-2-381T-04200	P.C Board Ass'y, Power Supply Heat Sink Fixer Fuse 400mA Bracket, Fuse I.C. μ PC78M18H I.C. TC4011 BP Transistor 2SC1175 Diode W02 Diode WZ052 Pan Head Tapping Screw 3x8mm	1 1 1 1 2 1 1 1 1 1
Q1 D1 D2			
CAPACITORS			
C3		Electrolytic 470 μ F 35V	1
C4		Electrolytic 100 μ F 25V	1
C1		Mylar 0.047 μ F 50V \pm 20%	1
C5		Mylar 0.01 μ F 50V \pm 20%	1
C2		Ceramic 0.01 μ F 50V +80-20%	1
RESISTORS			
R6		FP-Carbon 10 ohm \pm 5% 1/2W	1
R1		Carbon 3.3K ohm \pm 5% 1/4W	1
R2		Carbon 4.7K ohm \pm 5% 1/4W	1
R3		Carbon 2.2K ohm \pm 5% 1/4W	1
R4		Carbon 10K ohm \pm 5% 1/4W	1
R5		Carbon 180K ohm \pm 5% 1/4W	1
R7		Carbon 1.8K ohm \pm 5% 1/4W	1
R8		Metal 1K ohm \pm 5% 2W	1
STROBO PCB ASS'Y			
102	141-4-233T-23200 141-2-329T-06400	P.C. Board Ass'y, Strobo Led SLR53URCS Red Reflector	1 3 1
SPEED INDICATOR PCB ASS'Y			
103 D7,8	141-4-233T-23300	P.C Board Ass'y, Speed Indicator LED SLP114 B Red	1 2

Key No.	Part No.	Description	Q'ty
TURNTABLE MECHANISM			
M1	141-0-731T-72000	Slide Ass'y	1
M2	141-2-457T-23000	Special Washer	4
M3	141-2-753T-19700	Shaft	1
M4	141-2-457T-23101	Special Washer	1
M5	141-2-855T-48000	Spring Coil	1
M6	141-0-742T-33100	Lever Ass'y	1
M7	141-2-852T-56500	Spring Wire	1
M8	141-2-573T-10200	Bearing	1
M9	141-2-742T-40800	Lever	1
M10	141-0-742T-40900	Lever Ass'y	1
M11	141-2-855T-45200	Spring Coil	1
M12	141-2-457T-23800	Special Washer	3
M13	141-2-490T-02300	Tube	8
M14	141-2-411T-07400	Plate Nut	1
M15	141-2-457T-09200	Special Washer	2
M16	141-2-457T-22400	Special Washer	1
M17	141-2-742T-33200	Lever	1
M18	141-2-457T-23100	Special Washer	3
M19	141-2-855T-14700	Spring Coil	1
M20	141-2-742T-33500	Lever	1
M21	141-2-742T-40700	Lever	1
M22	141-0-742T-33400	Lever Ass'y	1
M23	141-2-855T-45100	Spring Coil	1
M24	141-2-742T-33600	Lever	1
M25	141-2-851T-56100	Spring Coil	1
M26	141-2-742T-36500	Lever	1
M27	141-2-855T-17001	Spring Coil	1
M28	141-2-742T-33700	Lever	1
M29	141-2-457T-23200	Special Washer	2
M30	141-0-742T-44900	Lever Ass'y	1
M31	141-2-855T-47800	Spring Coil	1
M32	141-0-311T-32201	Chassis Ass'y	1
M33	141-2-453T-30100	Washer	1
M34	141-0-581T-15500	Gear Ass'y	1
M35	141-0-351T-49100	Bracket M.T.G Ass'y	1
M36	141-2-453T-30701	Washer	1
M37	141-2-742T-36600	Lever	1
M38	141-2-457T-32800	Special Washer	1
M39	141-0-742T-36400	Lever Ass'y	1
M40	141-2-753T-80200	Shaft	1
M41	141-2-453T-30302	Washer	2
M42	141-0-351T-49900	Bracket M.T.G Ass'y	1
A	141-2-351T-49900	Bracket M.T.G	1
B	141-2-731T-76100	Slide	1
C	141-2-742T-40200	Lever	1
D	141-2-671T-05900	Cum	1
E	141-2-855T-44200	Spring Coil	1
F	141-2-852T-58700	Spring Wire	1
G	141-2-461T-35700	Pipe	1
H	141-2-457T-23000	Special Washer	3
I	141-2-453T-30301	Washer	1
J		Washer 3x10x1mm	1
K	141-2-453T-32300	Washer	1
L	141-2-453T-00800	Washer	1
M43	141-0-742T-40400	Lever Ass'y	1
M44	141-2-378T-10100	Bracket Motor	1
M45	4-527T-14101	Motor Ass'y	1
M46	141-0-742T-40300	Lever Ass'y	1
M47	141-0-174T-06123	Stand Ass'y	1
M48	141-2-453T-30802	Washer 6.2x9.5x0.5 Nylon	1
M49	141-2-453T-30102	Washer 2.1x4x0.5 Nylon	1

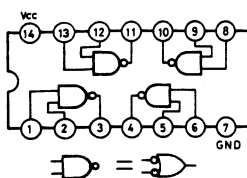
MECHANISM EXPLODED VIEW



SCHEMATIC DIAGRAM



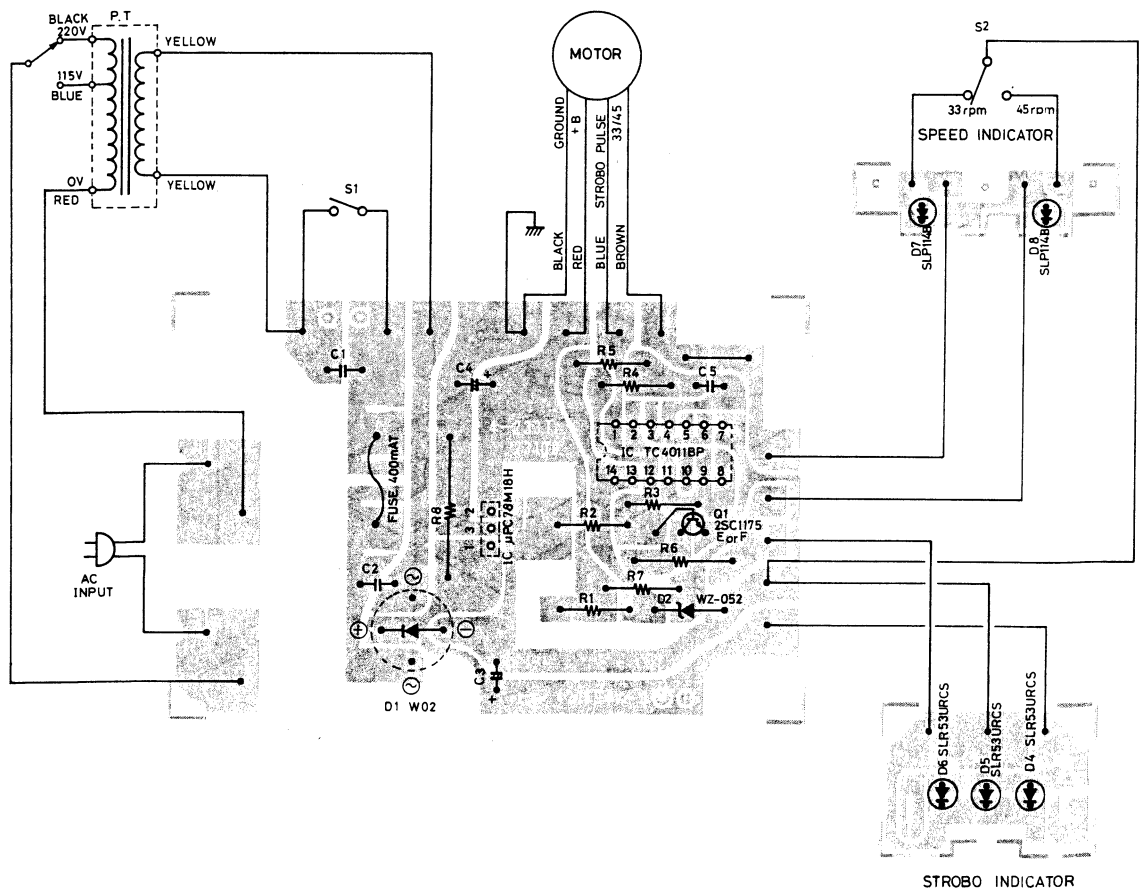
IC TC4011BP NAND GATE



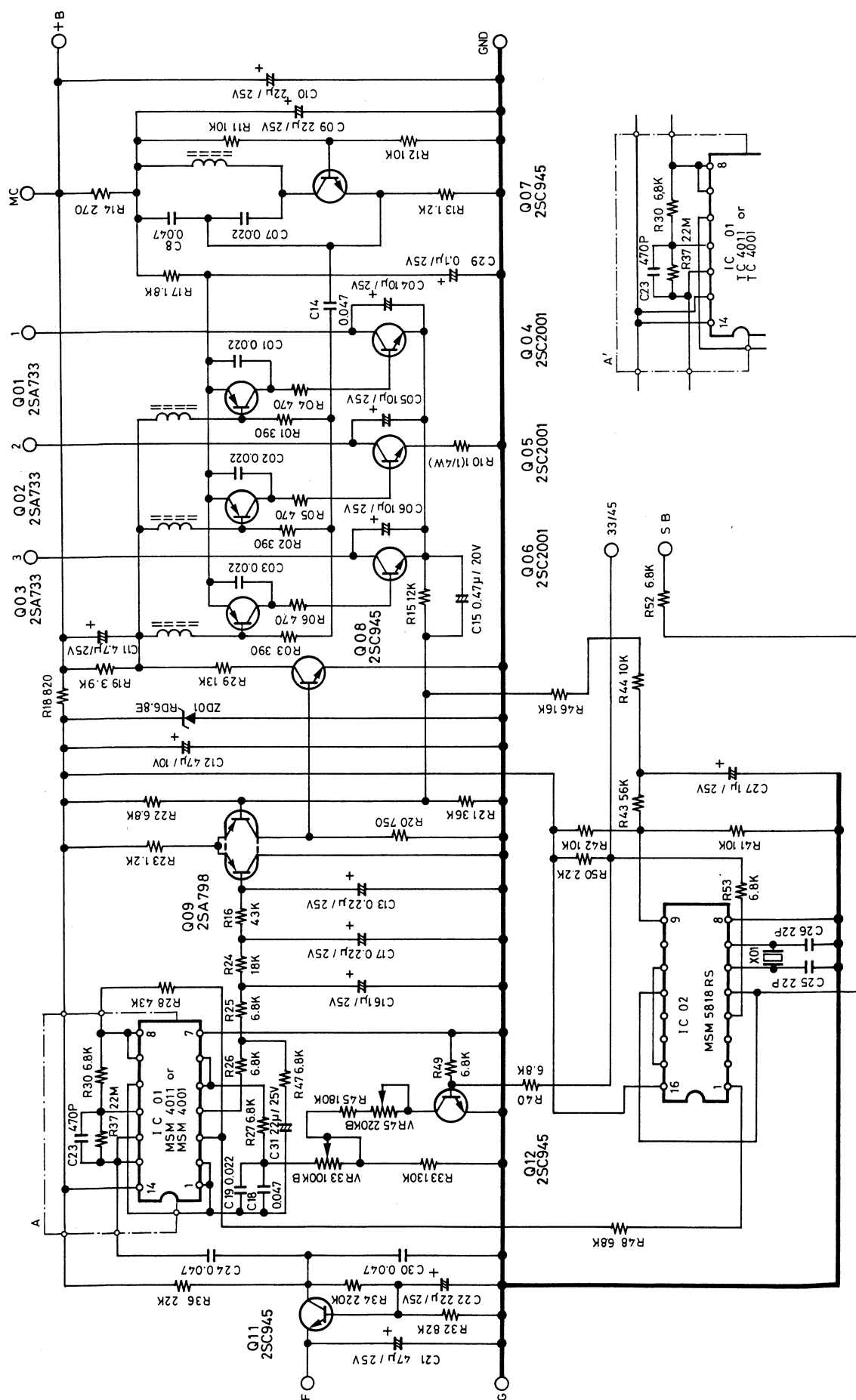
- S1 ---- POWER SWITCH
- S2 ---- SPEED SELECT SWITCH
- S3 ---- VOLTAGE SELECT SWITCH



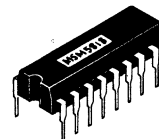
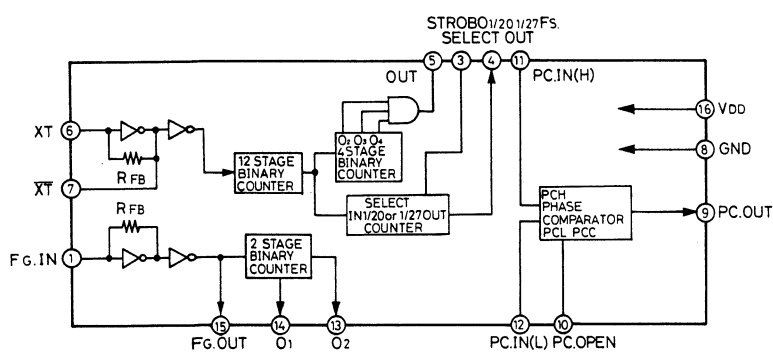
WIRING DIAGRAM



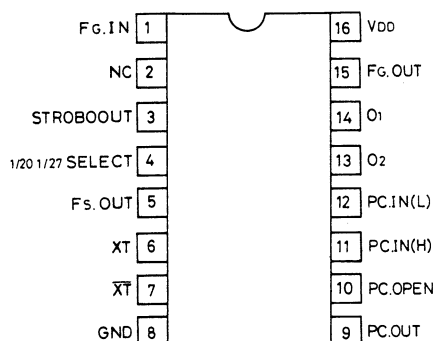
SCHEMATIC DIAGRAM



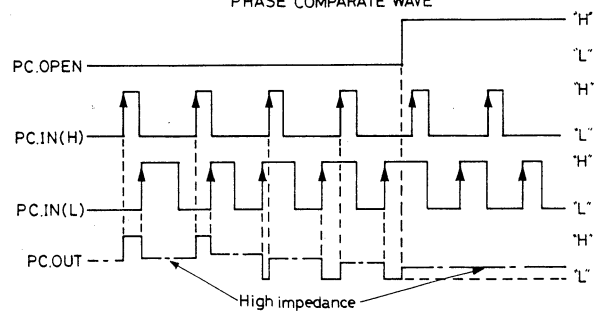
MSM5818RS (MOTOR CONTROL PLL LSI)



TOP VIEW
16 LEAD PLASTIC DIP

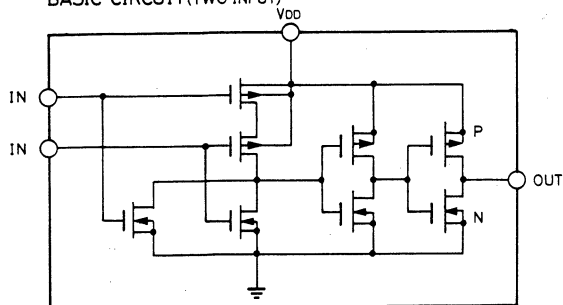


TIME CHART
PHASE COMPARE WAVE

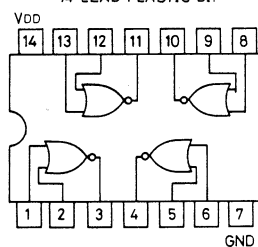


MSM 4001 RS (Quad 2-input NOR Gate)

BASIC CIRCUIT (TWO INPUT)

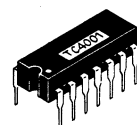


TOP VIEW
14 LEAD PLASTIC DIP



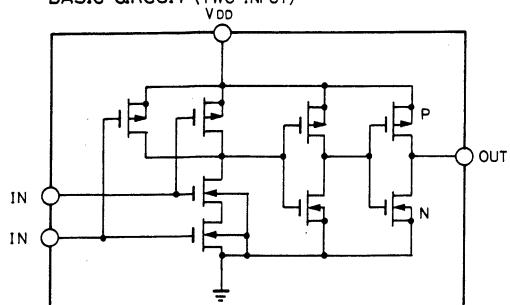
TRUTH VALUE TABLE

INPUT		OUTPUT
A	B	X
L	L	H
L	H	L
H	L	L
H	H	L

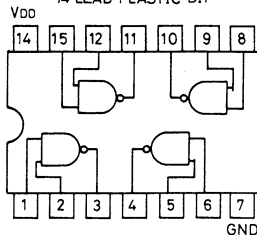


MSM 4011 RS (Quad 2-input NAND Gate)

BASIC CIRCUIT (TWO INPUT)

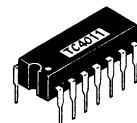


TOP VIEW
14 LEAD PLASTIC DIP



TRUTH VALUE TABLE

INPUT		OUTPUT
A	B	X
L	L	H
L	H	H
H	L	H
H	H	L



SANYO ELECTRIC TRADING CO., LTD.
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